Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

In the Matter of	)	
	)	
Rural Digital Opportunity Fund	)	WC Docket No. 19-126
	)	
Connect America Fund	)	WC Docket No. 10-90
	)	

COMMENTS OF MIDCO

Midco supports the Commission's priority to accelerate broadband deployment and its associated "economic opportunity, job creation, education, and civic engagement" in rural America.[1] Midco is excited at the proposed Rural Digital Opportunity Fund ("RDOF") to assist providers in further closing the Digital Divide.[2] Midco submits these comments[3] to highlight three items: (1) fixed wireless can help close the Digital Divide efficiently and cost effectively; (2) the speed tiers should be adjusted to provide more flexibility for providers; and (3) the Commission should not impose a subscription requirement or otherwise change substantially the rules and procedures from the Connect America Fund Phase II ("CAF II") auction.

INTRODUCTION

Midco has served the Midwest for over 85 years and has been a wired internet services provider for over 20 years. With almost 10,000 miles of fiber, largely in the rural areas of

1 Notice of Proposed Rulemaking, Rural Digital Opportunity Fund; Connect America Fund, 34 FCC Rcd. 6778 (2019) at ¶ 1 ("NPRM").
2 *Id.* at ¶ 4.
3 Midco is submitting these comments separate from its trade associations, namely NCTA - The Internet & Television Association, and WISPA - The Wireless Internet Service Providers Association. Midco incorporates the comments of NCTA and WISPA herein.

Minnesota, North Dakota, and South Dakota, Midco understands the difficulties associated with serving rural areas.

Midco knows that rural economies need broadband access, or they will eventually be "crippled."[4] Midco also knows, from over 20 years' experience in providing broadband access, that fixed wireless is a "proven and economically feasible solution" to providing broadband to rural America.[5]

Therefore, to better serve its most rural communities, Midco acquired an advanced fixed wireless provider in 2018. Using the Midco Edge Out℠ strategy, Midco can now edge out its high-speed Internet connectivity from its fiber backbone in more urban areas to rural areas using fixed wireless technology. Midco uses the initial fixed wireless expansion from its wired plant to meet consumers' immediate needs, and then, where prudent, leverages that expansion to justify a wired network buildout in the future.

The CAF II reverse auction, with its technology-neutral policies, worked well for the providers involved, including Midco. The Commission awarded Midco over $38.9 Million in the CAF II auction to serve remote, rural areas in Minnesota, South Dakota, and North Dakota using the Midco Edge Out℠ strategy. Midco, therefore, urges the Commission to continue

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4 NIST, *Agriculture / Rural Supercluster Blueprint, Rural America, Rural Economies and Rural Connectivity* at 15, https://pages.nist.gov/GCTC/uploads/blueprints/2019-Ag-Rura-Blueprint.pdf ("The growing importance of broadband to local and regional economies has been highlighted for nearly a decade. In an April 2011 report, the Center for Rural Strategies (CRS) concluded that while broadband will not bring immediate transformation to rural America, regions that lack broadband will be crippled." (citations omitted))

5 *Id.* at 17 ("A proven and economically feasible solution is fixed wireless internet provided by wireless internet service providers (WISPs). As technology continues to improve, WISPs have gained increasingly more attention as a solution to closing the digital divide. WISPs currently provide more than four million residential and business customers with much-needed broadband access often in exclusively rural areas." (citation omitted)).

encouraging providers to use fixed wireless and other innovative technology to serve rural America by instituting fair and supportive RDOF auction rules.

DISCUSSION

I. Fixed wireless technology is a proven and cost-effective way to provide high-speed, low latency broadband to rural America

Some commentators argue that the Commission should skew the RDOF auction to favor fiber networks.[6] For example, the North Dakota Joint Commentators, a group of rural telephone companies in North Dakota, argue that the Commission should use RDOF funds to support "future-proof fiber."[7] The Commission should reject the unsubstantiated statements about fixed wireless technology made by this group and other groups arguing for fiber-only deployments, and continue using its technology-neutral rules for the RDOF auction.

A. Fixed wireless technology provides high-speed, low latency broadband access to rural America

The assertion that "[a] fixed wireless systems cannot achieve and maintain the 100/20 Mbps speed obligations as more customers are added to an Access Point" is, at best, misleading.[8] Midco has proven, in real world testing, that 100/20 Mbps speeds are obtainable using an innovative network design composed of wired and wireless LTE technology.

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6 *See, e.g.*, Comments of the Buckeye Hills Regional Council, WC Doc. Nos. 19-126 & 10-90 (Sept. 19, 2019) at 1, 6-7, 8; Comments of the West Virginia Broadband Enhancement Council, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 8-9 (alleging mountainous terrain makes fixed wireless "less beneficial to end users"); Comments of the Joint RDOF Commenters, WC Doc. Nos. 19-126 & 10-90 (Sept. 19, 2019 at 5-6, 9-12 (offering limited examples and anecdotes that fixed wireless providers cannot serve their customers); Comments of Conexon, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 10-11 (claiming, without support, that fixed wireless is "inherently less reliable").

7 Comments of the North Dakota Joint Commenters, WC Doc. Nos. 19-126 & 10-90 (Sept. 19, 2019) ("NDJC Comments") at 2.

8 *Id.*

Beginning in 2018, Midco tested and proved out 100/20 Mbps speeds using next generation LTE technology on its 3.5 GHz experimental license in Thompson, ND. Figure 1 shows the results of this testing.[9] Speeds of 100/20 Mbps are possible over 7 miles away from a vertical asset using the 3.5 GHz band; speeds and distances only increase using the 2.5 GHz band.[10] Contrary to unsubstantiated claims, the access point does not automatically degrade as more customers are added.[11] Midco serves over 110 customers off the Thompson, ND site and all are capable of receiving at least the minimum current broadband speed. Proper engineering using proven LTE standards assures that all customers served off an access point are able to receive the speed package to which they subscribe. Even if the maximum customer count per sector is met, a sector split, much like a node split on the wired plant, can provide additional capacity. A sector split is a cost-effective method to add additional customers to an already deployed vertical asset.

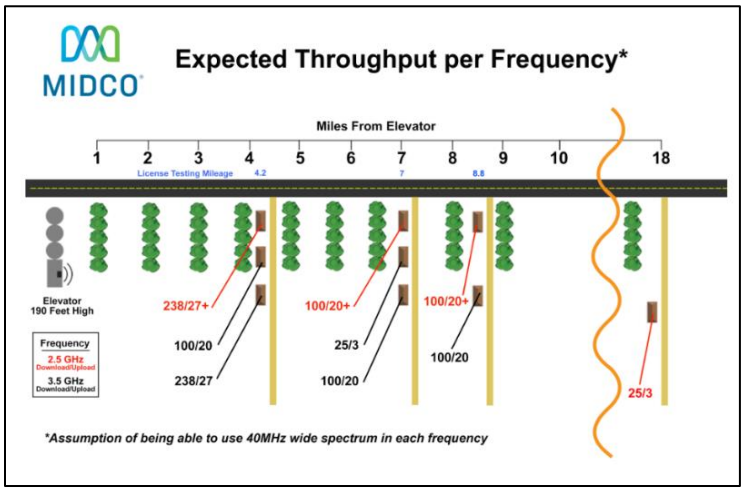

Figure 1: Mid-Band LTE in Rural North Dakota

9 *Id.* at 3 ("Ubiquity of service is another crucial factor that should be considered in determining the point spread. Due to wireless signal propagation loss and wireless distance sensitivity, the capacity of any fixed wireless Access Point degrades with distance.")
10 *See generally* Comments of Midco, WT Doc. No. 18-120 (Nov. 8, 2018) (describing the potential of the 2.5 GHz band to connect rural America).
11 NDJC Comments at 2 ("A fixed wireless system cannot achieve and maintain the 100/20 Mbps speed obligations as more customers are added to an Access Point. There is a finite amount of spectrum available on an Access Point. The performance variations between subscriber units will degrade the performance of the whole Access Point as more customers are added.")

The continuing advancement of LTE equipment ensures that fixed wireless deployments are scalable to meet future demand. For example, in the year since the testing in Figure 1 occurred, the spectral efficiency of customer premise equipment has significantly increased, and speeds of 200/40 Mbps are now possible and sustainable. Carrier-grade LTE fixed wireless technology continues to advance as the industry advances towards fixed 5G technology. The combination of this technology advancement, and the Commission's work to allow fixed wireless providers to use additional spectrum bands, such as the C Band[12] and the 6 GHz band,[13] results in a scalable technology for even more robust service in the near future.

The Commission has also implemented various checks and balances to ensure that providers are meeting their service obligations. These checks include buildout milestones and speed and latency testing during the support time period.[14] After the buildout is complete, the Commission continues to have oversight by requiring a provider to serve a CAF location within 10 days after a request to do so, if that location is not already served.[15] These checks ensure that a provider that accepts funding is not deploying "spotty and unreliable" service.[16]

B. Fixed wireless networks are cost-effective, especially in remote rural areas

There can be no doubt that fiber plays an important role in providing customers with broadband access, but, despite hundreds of millions of dollars in subsidies in past funding programs, fiber alone has not solved the Digital Divide. Nor is it reasonable to expect fiber to

12 *See, e.g.*, Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz, GN Doc. No. 18-122, Notice of Proposed Rulemaking.
13 *See, e.g.*, Unlicensed Use of the 6 GHz Band, ET Doc. No. 18-295, Notice of Proposed Rulemaking.
14 NPRM at ¶¶ 23-39.
15 *Id*. at ¶ 28.
16 NDJC Comments at 3 ("Often, houses are surrounded by trees and other vegetation that provide shelter-belts to protect it from the harsh winter winds. This makes it very difficult to gain Line-of-Sight ("LOS") or Near-Line-of-Site ("NLOS") throughout the cell, creating spotty and unreliable service.").

serve every home, business, and farm acre in rural America. Midco knows the same because it has been providing rural America with broadband access for over 20 years, and the business models do not support fiber-to-the-home deployments for the most rural, remote communities without significant initial and on-going subsidies.

Scarce taxpayer dollars should be used only to assist in the initial capital expenditure to build networks when business models make it difficult, if not impossible, to deploy without some assistance. These limited funds should be used to deploy cost-effective technology that can scale to meet consumers' needs and should not be used to support on-going operations.

Midco recently completed cost modeling to serve a new remote, rural community and compared the buildout using a Gigabit-capable wired network to an LTE fixed wireless network. While it would cost Midco over $2,000 per home passed to build a wired network, it would cost only $480 per home passed to build a fixed wireless network capable of 100/20 Mbps speeds. Using the Midco Edge Out℠ strategy, that community could be upgraded to a fiber network using private capital if the business model supports doing so, or the community could continue to be served using next generation fixed wireless equipment. Either way, the community will have high-speed, low latency broadband access. Other commentators agree with Midco that fiber alone cannot solve the Digital Divide.[17]

17 Verizon Comments, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 4-5 ("Not only will wireline and fixed wireless services provide robust broadband to homes and businesses, but they will be built on scalable fiber infrastructure that will support future increases in broadband speeds . . . the RDOF program could meet its objectives by awarding support for fiber to the home deployments in some relatively lower-cost eligible areas and for fixed wireless deployments in higher-cost eligible areas."); *see generally* WISPA Comments, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) ("WISPA Comments") (supporting fixed wireless providers participating in RDOF).

Similar to the CAF II auction rules,[18] the Commission should implement RDOF rules that continue encouraging internet service providers to use innovative technologies like LTE fixed wireless networks to bridge the Digital Divide.

II. The Commission should create a tier of 50/5 Mbps with a weight of 30 to promote robust broadband access

During the CAF II auction, the Commission created appropriate incentives to encourage providers to build out networks capable of the highest possible speeds using a series of speed and latency weights in tiers of Below Baseline, Baseline, Above Baseline, and Gigabit. In CAF II, the spread between the best and least performing tiers was 90 points.[19] For RDOF, the Commission has proposed to omit the Below Baseline tier but maintain the 90-point spread by increasing the weight on the Above Baseline (100/20 Mbps) tier from 15 to 25.[20] Other commentators have suggested an even greater weight on the 100/20 Mbps tier.[21]

Increasing the weight for 100/20 Mbps tier, a very obtainable speed by fixed wireless, only increases the possibility that the RDOF auction will be skewed toward fiber-only deployments. Weighting the 100/20 Mbps tier beyond a weight of 15 reduces the likelihood that

18 In the CAF II auction, the Commission stated that its tiers reflected the "diversity of broadband offerings in the marketplace today" because it wanted to "maximize the number of consumers served within our finite budget." Connect America Fund, et al., Report and Order and Further Notice of Proposed Rulemaking, WC Doc. Nos. 10-90, 14-58 and 14-259, 31 FCC Rcd 5949, 5957, ¶ 16 (2016).

19 *See, e.g.*, NPRM at ¶ 25 (explaining the weights and tiers).

20 *See id.*

21 *See, e.g.*, NDJC Comments at 1-2 (suggesting a Baseline weight of 65, Above Baseline weight of 50); Comments of The Utilities Technology Council, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 10 & n.19 (suggesting to eliminate Baseline, and increase the Above Baseline weight to 75); Comments of ACA Connects, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 9 (suggesting a Baseline weight of 75); Comments of NTCA—The Rural Broadband Association, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at iv, 10-12 (suggesting a Baseline weight of 79).

the RDOF auction will be as successful as the CAF II auction "in obtaining commitments from winning bidders for the deployment of robust service from a variety of service providers."[22] Midco encourages the Commission to adopt similar technology-neutral standards from the CAF II auction in the RDOF auction.[23]

To that end, Midco agrees with other commentators who propose a new speed tier with adjusted weights to encourage competition and innovation.[24] Midco understands that WISPA will be proposing a 50/5 Mbps tier with a weight of 30, with the following tier and weights chart:

Performance Tier	Speed	Monthly Usage Allowance	Weight
Minimum	≥ 25/3 Mbps	≥ 150 GB or U.S. median, whichever is higher	50
Baseline	≥ 50/5 Mbps	≥ 150 GB or U.S. median, whichever is higher	30
Above Baseline	≥ 100/20 Mbps	≥ 2 TB or U.S. median, whichever is higher	15
Gigabit	≥ 1 Gbps/500 Mbps	≥ 2 TB or U.S. median, whichever is higher	0

22 NPRM at ¶ 23.

[23] NPRM at ¶ 23 ("Given the success of the CAF Phase II auction in obtaining commitments from winning bidders for the deployment of robust service from a variety of service providers, we propose to adopt similar technology-neutral standards for services supported by the Rural Digital Opportunity Fund. Specifically, we propose to permit bids in the Baseline, Above-Baseline, and Gigabit performance tiers with the same speed and usage allowance requirements as the CAF Phase II auction and to place low latency or high latency bids meeting the same latency requirements as the CAF Phase II auction high and low latency bidders.").

24 *See, e.g.*, Comments of Sacred Wind Communications, Inc., WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 6-7 (proposing a speed tier of 50/6 with a weight of 30); WTA – Advocates for Rural Broadband Comments WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 10-11 (proposing an "Evolving Baseline Tier having a target speed of 25/3 Mbps during Years 1 to 5, and a target speed of 50/6 Mbps during Years 6 to 10 as an additional bidding option, and give it a significantly more advantageous weight than the Baseline Tier option. The objective of this or a similar approach is to give a substantial RDOF weighting preference to bidders that recognize that broadband speeds and services are likely to continue to evolve, and that propose a network that is more scalable and more economically able to deliver higher broadband speeds during the ten-year RDOF term if such higher speeds are needed by consumers to make use of new applications and service.").

Midco supports this proposal and believes that it is a sensible solution that promotes the Commission's policy objectives. A 50/5 Mbps tier has a rational relationship to the speeds that consumers actually purchase,[25] which Midco believes promotes the Commission's policy objectives in closing the Digital Divide. Further, the 50/5 Mbps speed tier has been recognized as a broadband benchmark, meaning there would be no need for additional studies on the appropriate prices to set for the 50/5 Mbps tier.[26]

Adopting a 50/5 Mbps speed tier with a weight of 30 will balance the Commission's policy with continuing innovation.

III. The Commission should decline to create any subscribership requirements or otherwise change substantially any of the procedures from the CAF II auction

From Midco's perspective as a successful bidder, the rules and application procedures for the CAF II auction were fair and should remain substantially the same for the RDOF auction. Providers who participated, or considered participating, in CAF II now understand the rules, as does the Commission and its staff. The Commission can more efficiently administer the RDOF auction by using the same rules, procedures, and applications as those in the CAF II auction. For example, the Commission should, as suggested by other commentators, continue to use census block groups as the geographic unit to distribute funding in the RDOF auction.[27]

WISPA Comments at 13-14 (citing 2019 Broadband Deployment Report, 34 FCC Rcd 3857, 3887, Fig .13 (2019); Comments of USTelecom—The Broadband Association, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 37-38 (noting that speeds of 25/3 Mbps have a take rate of 23.1 to 57.7% in rural areas, while the take rate for 100/20 Mbps ranges from 10 to 25%). Midco's experience confirms that the majority of consumers do not typically purchase the top speed package offered.

26 *See generally* Wireline Competition Bureau Announces Results of 2019 Urban Rate Survey, WC Doc. No. 10-90 (Dec. 20, 2018).

27 *See generally* WISPA Comments at 27-28.

Similarly, the short form and long form applications appropriately balance the Commission's need to understand a provider's network with a provider's ability to innovate. The Commission should reject proposals to the application process that change the applications' fundamental nature, especially proposals that only require fixed wireless providers to supply detailed network plans and contingency network plans as proposed by NTCA.[28] The Commission should decline to adopt rules and procedures that favor one technology.

Similarly, the Commission should decline to impose a subscribership milestone.[29] Midco joins commentators from various industries in opposing such a requirement as outside the scope of the Commission's authority and practically unnecessary in deploying broadband.[30]

As clarified by WISPA, Section 254 of the Communications Act limits the use for support to "the provision, maintenance, and upgrading of facilities and services for which the support is intended."[31] The Act does not provide funding for adoption programs. NCTA similarly reasoned that a subscribership milestone would contravene the policy goals for broadband deployment:

> The goal of the Commission's universal service high-cost support programs has always been to ensure that robust and affordable services are available to people living in rural, tribal, and other high-cost areas . . . Requiring providers not only to provide broadband services in high-cost areas, but also to ensure that residents in these areas purchase the services would add a level of uncertainty into the funding

28 Comments of NTCA, WC Docket Nos. 19-126 & 10-90 (Sept. 20, 2019) at 23-26 (proposing bidders to submit propagation maps and technical showings with their short form applications and introducing a requirement to flag future spectrum assets to be used and contingency network plans).
29 NPRM at ¶ 41 (seeking comment on a proposal to adopt subscribership milestones).
30 *See, e.g.*, Comments of NCTA – The Internet & Television Association, WC Docket Nos. 19-126 & 10-90 (Sept. 20, 2019) at 7-8 ("NCTA Comments"); WISPA Comments at 21-23; Comments of USTelecom – The Broadband Association, WC Doc. Nos. 19-126 & 10-90 (Sept. 20, 2019) at 36-37 (calling the proposed subscribership requirement "unnecessary and misguided").
31 WISPA Comments at 21 (quoting 47 U.S.C. §254(d)).

> mechanism, including how much support would be needed to spur adoption in an area, and could potentially deter bidders.[32]

Midco agrees with this reasoning. Moreover, practically, a subscribership requirement is unnecessary to propel providers to sell their services and increase revenues. Recurring revenues from rural customers are vital to sustaining and encouraging private investment in networks after the initial deployment. The need for these recurring revenues is sufficient motivation for providers to market their broadband services to rural customers.

CONCLUSION

Fixed wireless technology provides high-speed broadband access to rural America, and the Commission should encourage providers to use fixed wireless and other innovative technology to close the Digital Divide. Therefore, the Commission should adjust the speed tiers to allow for a 50/5 Mbps tier with a weight of 30. The Commission should also decline to institute any subscribership requirement or otherwise change substantially any of the rules, procedures, or applications from the CAF II auction.

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Respectfully submitted,

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32 NCTA Comments at 7-8.